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Claims:

1. A fuel cell system, comprising;
 - a) a fuel cell for driving a load;
 - 5 b) at least one fuel cell peripheral;
 - c) a measurement means for determining at least one fuel cell operation characteristic;
 - d) at least one controller for controlling the operation of at least one fuel cell peripheral based on the at least one fuel cell operation
 - 10 characteristic;

wherein the spectrum of the at least one fuel cell operation characteristic is divided into at least two ranges, and the controller is adapted to control said at least one fuel cell peripheral to provide a respective operational characteristic for said at least one fuel cell peripheral for each range.
- 15 2. A fuel cell system as claimed in claim 1, wherein the fuel cell operation characteristic is selected from the group consisting of current, current density and power output.
3. A fuel cell system as claimed in claim 2, wherein
 - a) said at least one fuel cell peripheral comprises at least one of
 - 20 a coolant recirculation pump, a hydrogen recirculation pump, a hydrogen purging means and a reactant supply means; and,
 - b) the controller is operable to control the operation of at least one of these fuel cell peripherals.
4. A fuel cell system as claimed in claim 2, wherein the controller
- 25 comprises
 - a memory for storing a plurality of ranges in a fuel cell operation characteristic spectrum, and, for each fuel cell peripheral of said at least one

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fuel cell peripheral, a plurality of operational characteristics correlated with the plurality of ranges; and

5 a processor for determining a current operating range in the plurality of ranges in the fuel cell operation characteristic spectrum based on the at least one fuel cell operation characteristic measured by the measurement means, and for determining a current operational characteristic correlated with the current operating range of the fuel cell operation characteristic;

10 the controller being operable to operate each fuel cell peripheral at an operational characteristic correlated with the range of the fuel cell operation characteristic.

5. A fuel cell system as claimed in claim 4, wherein the plurality of operational characteristics of the at least one fuel cell operation characteristic includes an idle level in which the load does not draw current from the fuel cell.

6. A method of operating a fuel cell system comprising a fuel cell, and at least one fuel cell peripheral, comprising

a) connecting a load to the fuel cell system and providing a drive current from the fuel cell system to drive the load;

20 b) measuring at least one fuel cell operation characteristic; and

c) controlling an operational characteristic of the at least one fuel cell peripheral based on the at least one fuel cell characteristic, and for at least two different ranges of the fuel cell operation characteristic, providing a respective operational characteristic for said at least one fuel cell peripheral.

25 7. A method as defined in claim 6 wherein the fuel cell operation characteristic is selected from the group consisting of current, current density and power output.

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8. A method as claimed in claim 7, wherein the at least one fuel cell peripheral comprises at least one of a coolant recirculation pump, a hydrogen recirculation pump, a hydrogen purging means and a reactant supply means.

5 9. A method as claimed in claim 8, wherein

the at least one fuel cell operation characteristic is variable within a plurality of ranges in a fuel cell operation characteristic spectrum,

the at least one fuel cell peripheral is operable at a plurality of operational characteristics correlated with the plurality of ranges, and

10 step (c) comprises operating the at least one fuel cell peripheral at an operational characteristic correlated with the range of the fuel cell operation characteristic.

10. A fuel cell system as claimed in claim 3, wherein the plurality of levels of the at least one fuel cell operation characteristic includes an idle level
15 in which the load does not draw current from the fuel cell.